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4,581,715

Apr. 8, 1986

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Fourier transform processor

INVENTOR: Gilbert P. Hyatt, P.O. Box 4584, Anaheim, CA 92803

APPL-NO: 6/425,731

DATE FILED: Sep. 28, 1982

REL-US-DATA: Continuation-in-part of Ser. No. 160,872, Jun. 19, 1980, Pat. No. 4,491,930, Jan. 1, 1985, and a continuation-in-part of Ser. No. 860,257, Dec. 14, 1977, Pat. No. 4,371,923, Feb. 1, 1983, said Ser. No. 160,872 is a continuation-in-part of Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819, Mar. 30, 1982, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, Sep. 11, 1984, Ser. No. 849,812, Nov. 9, 1977, Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, Jun. 11, 1985, Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Feb. 1, 1983, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Mar. 13, 1979, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Dec. 4, 1984, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Jun. 24, 1980, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Jun. 24, 1980, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Dec. 14, 1982, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Jun. 24, 1980, Ser. No. 402,520, Oct. 1, 1973, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Jul. 5, 1977, Ser. No. 366,741, Jun. 4, 1973, Pat. No. 3,986,922, Oct. 12, 1976, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Nov. 29, 1977, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Apr. 5, 1977, Ser. No. 302,771, Nov. 1, 1972, Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Aug. 2, 1983, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Oct. 17, 1978, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Jan. 12, 1982, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Jan. 25, 1983, Ser. No. 230,872, Mar. 1, 1972, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, Jun. 28, 1974, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 134,958, Apr. 19, 1971, and Ser. No. 101,881, Dec. 28, 1970.

INT-CL: [4] G06F 15\*31

US-CL-ISSUED: 364\*726

US-CL-CURRENT: 364\*726

SEARCH-FLD: 364\*724, 725, 726, 728

REF-CITED:

# U.S. PATENT DOCUMENTS

3,033,453	5/1962	Lode	364*747
3,197,621	7/1965	Urquhard	364*747
3,444,360	5/1969	Swan	364*606
3,446,949	5/1969	Trimble	364*734
3,479,495	11/1969	Malm	364*819

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## Fourier transform processor

3,496,529	2/1970	Anstey et al.	367*40
3,514,757	5/1970	Weintraub	364*747
3,521,170	7/1970	Leuthol	364*602
3,544,775	12/1970	Bergland et al.	364*421
3,573,622	4/1971	Holzman et al.	375*18
3,581,078	5/1971	Robertson	364*827
3,586,843	6/1971	Sloane	364*604
3,614,626	10/1971	Dillard	375*99
3,629,509	12/1971	Glaser	364*724
3,629,800	12/1971	Schneider	367*40
3,633,170	1/1972	Jones	364*724
3,701,894	10/1972	Low et al.	364*728
3,715,666	2/1973	Mueller	364*825
3,731,268	5/1973	Landrum	367*41
3,732,409	5/1973	Fletcher	364*724
3,735,269	5/1973	Jackson	328*14
3,745,317	7/1973	Berthier et al.	364*726
3,767,907	10/1973	Radcliffe, Jr.	364*822
3,772,681	11/1973	Skingle	364*607
3,777,133	12/1973	Beck et al.	364*728
3,789,199	1/1974	Kotwicki	364*602
3,831,013	8/1974	Alsup et al.	364*728
3,875,394	4/1975	Shapely	364*604
3,883,725	5/1975	Fort et al.	364*421
3,894,219	7/1975	Weigel	364*602
3,903,401	9/1975	Jayant	364*485
3,906,400	9/1975	Gooding et al.	364*724
3,935,439	1/1976	Buss et al.	364*824
3,949,206	4/1976	Edwards et al.	325*42
4,013,998	3/1977	Bucciarelli et al.	364*517
4,023,028	5/1977	Dillard	364*726
4,037,159	7/1977	Martin	375*1
4,058,715	11/1977	Niva	364*726

## OTHER PUBLICATIONS

Guerriero: Computerizing Fourier Analysis Control Engineering, Mar. 1970, pp. 90-94.

Nakamura: A Digital Correlator Using Delta Modulation, IEEE Transactions on Acoustics, Speech, and Signal Processing, Jun. 1976, pp. 238-243.

Seriff et al., "The Effect of Harmonic . . . Surface Sources", 4/70, pp. 234-246, Geophysics, vol. 35, #2.

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## ABSTRACT:

An improved Fourier transform processor is provided for generating frequency domain output signals in response to time domain input signals. Various configurations are provided. Processing on the fly as samples are received yields improvements such as greater speed and reduced circuitry. Generating higher resolution output samples in response to lower resolution input samples yields improvements such as greater precision and reduced circuitry. Directly combining complex signal components yields improvements such as greater SNR and reduced circuitry. Single bit processing yields improvements such as greater speed and reduced circuitry.

44 Claims, 50 Drawing Figures

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